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Fall 2008 Monitoring Well Sampling and Analysis Report Deseret Chemical Depot, Utah

February, 2009

Prepared for:

US Army Corps of Engineers
Sacramento District
Environmental Engineering Branch
1325 J Street
Sacramento, California 95814

Contract Number:
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Prepared by:
SC Environmental, Inc.
3637 Honeyglen Way
Ontario, California 91761

View from the Valley During Groundwater Sampling
November 2008 at Deseret Chemical Depot, Utah.

Presentation Outline

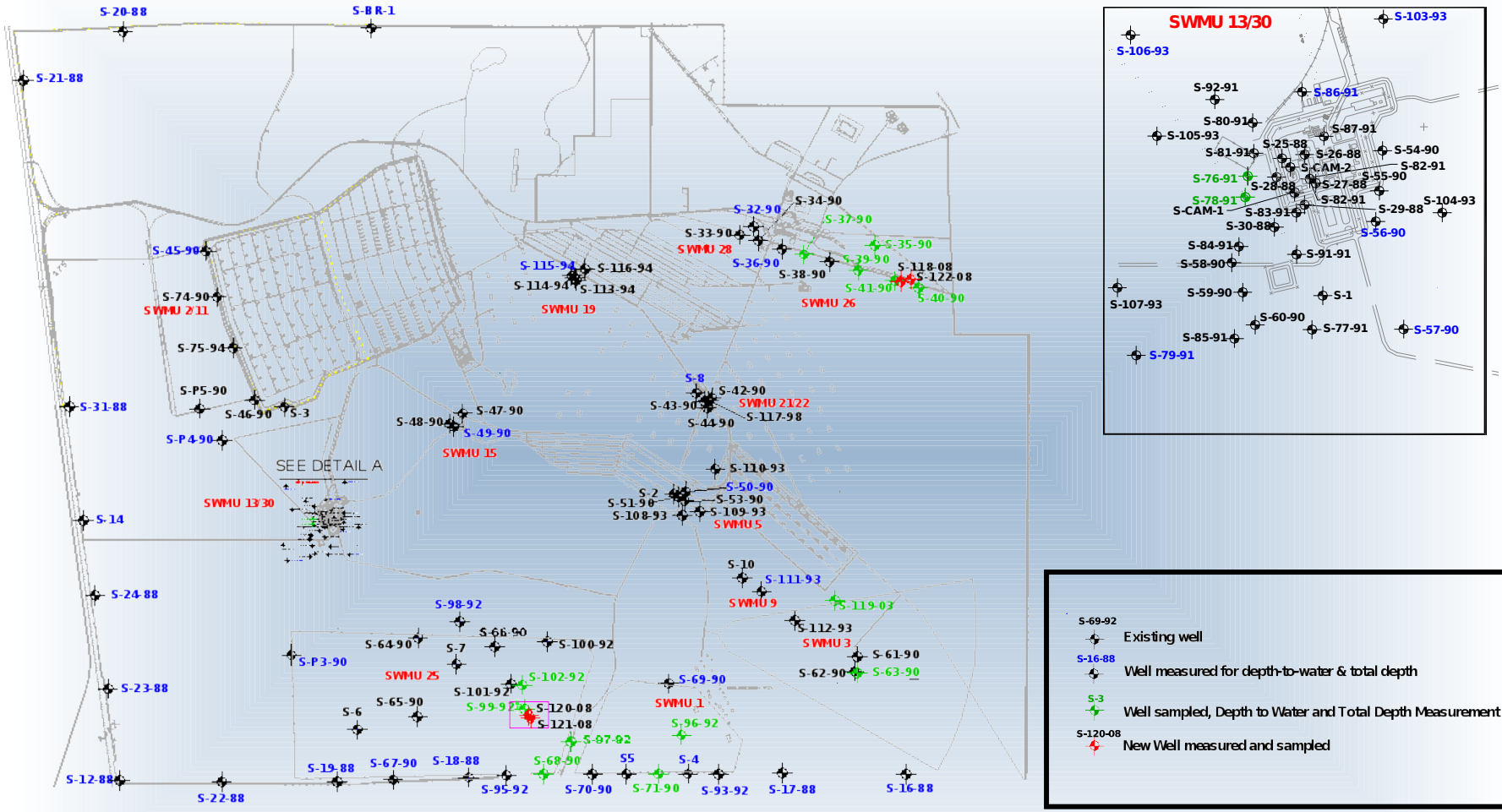
2008 Groundwater Monitoring Event

- Groundwater Level Measurements
- Groundwater Contaminants Sampling and Analysis

More Specifically:

- ❑ Depth to Water Measurement in 54 wells
- ❑ Water Elevation Contour Map
- ❑ Changes in Groundwater Elevation from 2007
- ❑ Floating Product Thickness Measurements in SWMU 13/30
- ❑ Analyzed Groundwater from 17 Wells
- ❑ Carbon Tetrachloride Evaluation
- ❑ Recommendations
- ❑ Proposed 2009 Monitoring Activities

DCD Groundwater Monitoring Location



S-69-92 Existing well

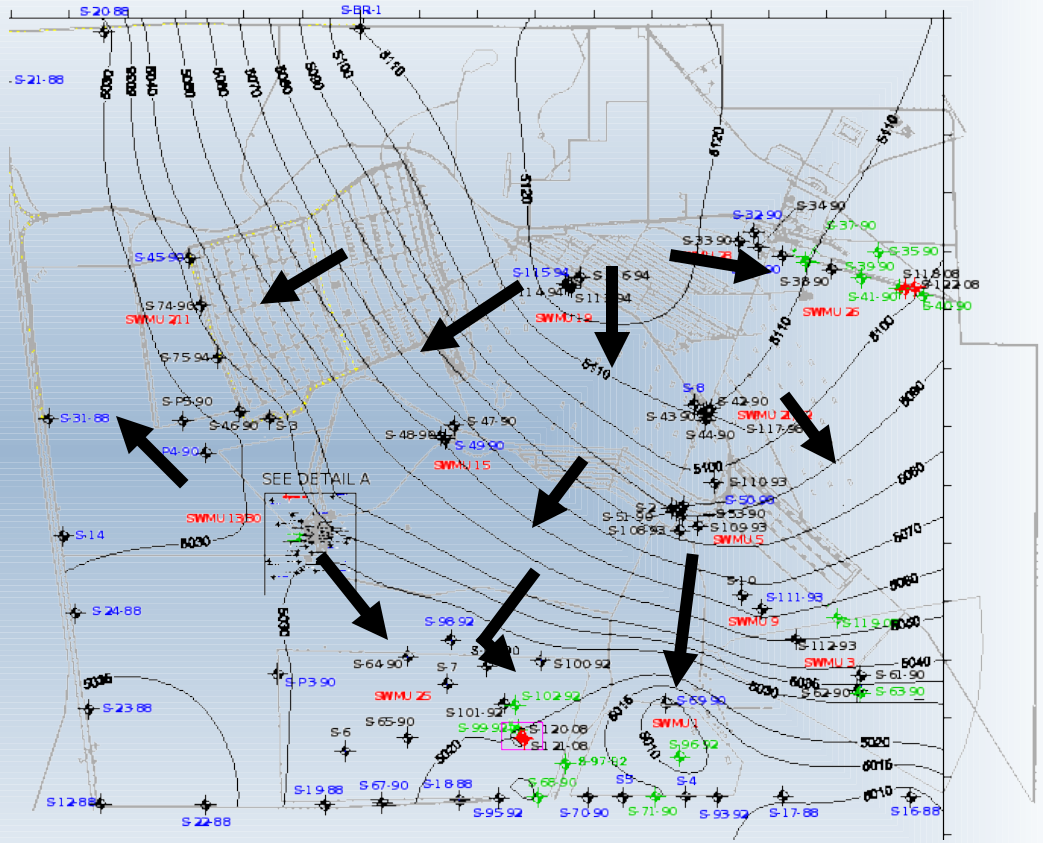
S-16-88 Well measured for depth-to-water & total depth

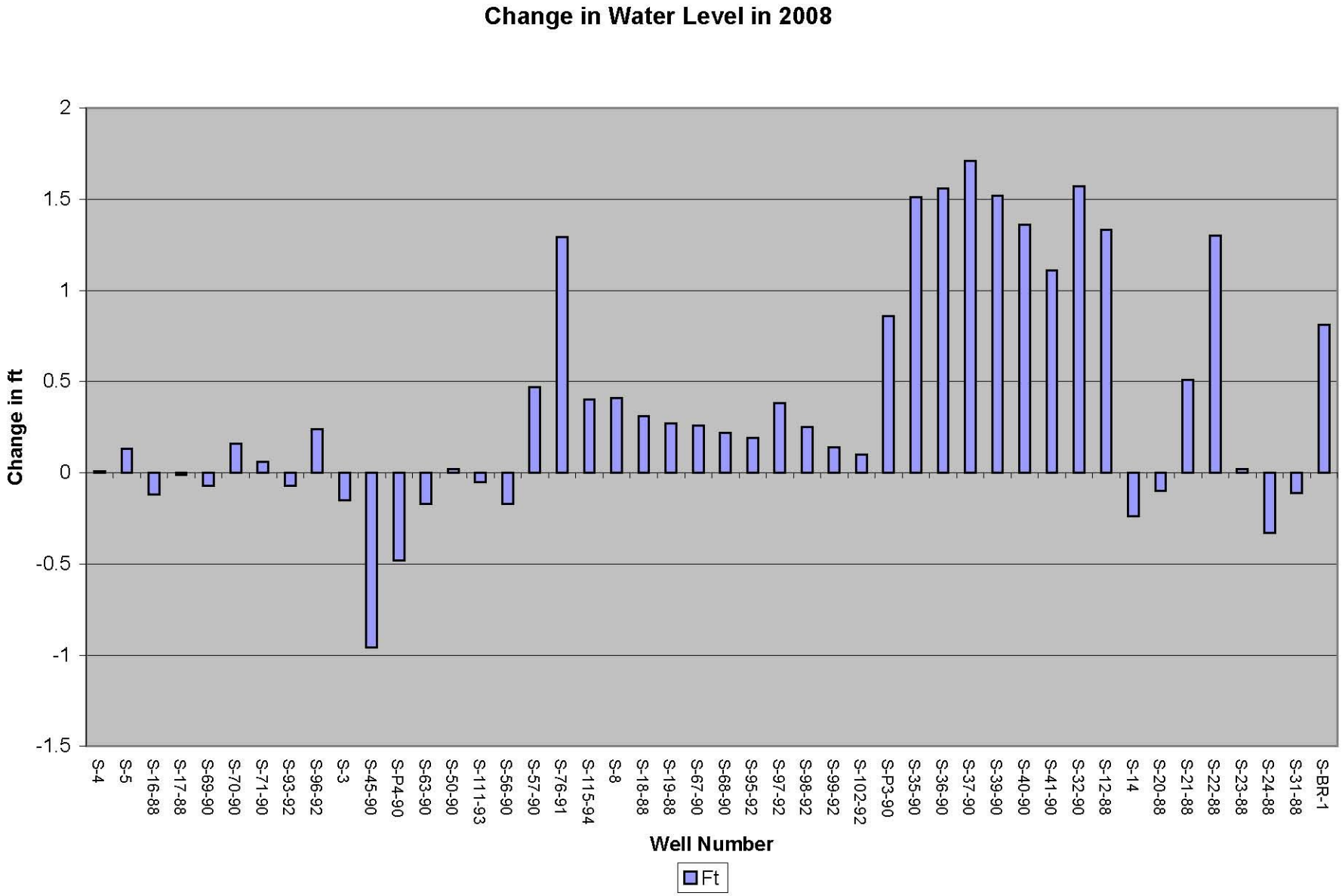
S-3 Well sampled, Depth to Water and Total Depth Measurement

S-120-08 New Well measured and sampled

DCD Groundwater Flow Directions

- Depth-to-water measured in 54 wells
- Water-level data used to contour the potentiometric surface
- Water-level data compared to previous year




Change in Water Level in 2008
Change in ft
2
1.5
1
0.5
0
-0.5
-1
-1.5
S-4
S-5
S-16-88
S-17-88
S-69-90
S-70-90
S-71-90
S-93-92
S-96-92
S-3
S-45-90
S-P4-90
S-63-90
S-50-90
S-111-93
S-56-90
S-57-90
S-76-91
S-115-94
S-8
S-18-88
S-19-88
S-67-90
S-68-90
S-95-92
S-97-92
S-98-92
S-99-92
S-102-92
S-P3-90
S-35-90
S-36-90
S-37-90
S-39-90
S-40-90
S-41-90
S-32-90
S-12-88
S-14
S-20-88
S-21-88
S-22-88
S-23-88
S-24-88
S-31-88
S-BR-1
Well Number
Ft

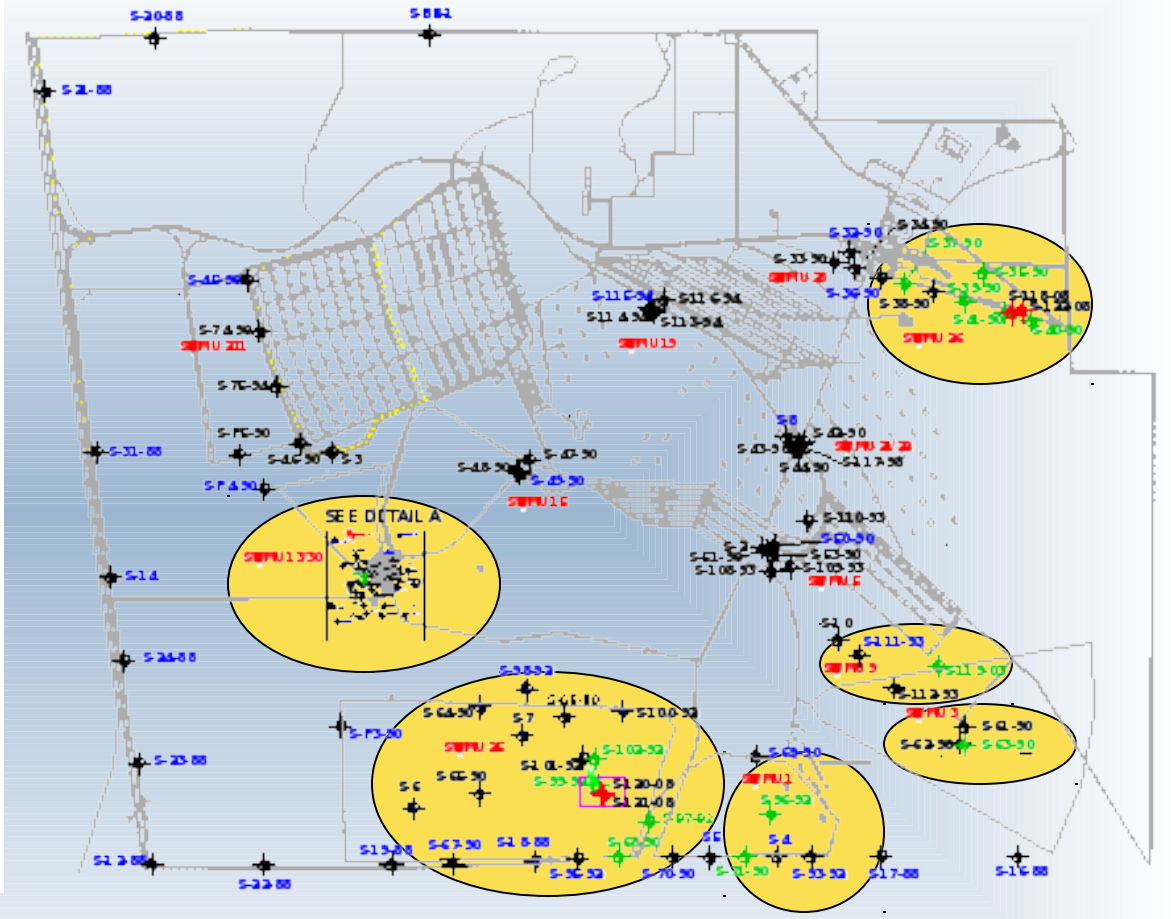
DCD Groundwater Sampled Areas

SWMUs 1,3, 9, 13/30, 25, and 26 were sampled

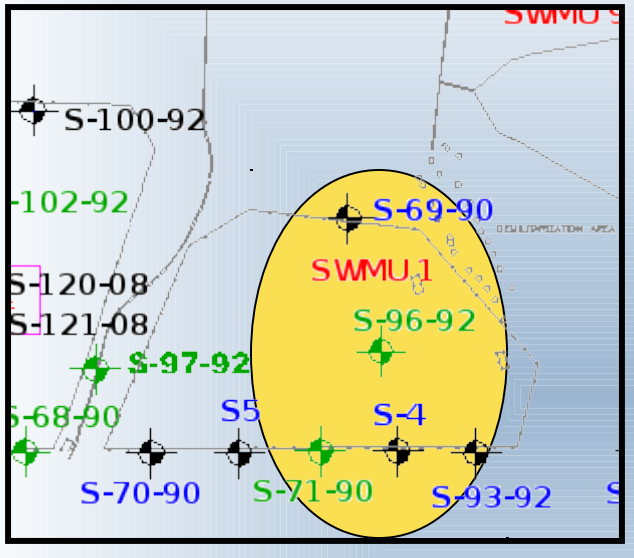
Water samples were collected from 17 wells for selected chemical analyses

Analyzed for VOCs, SVOCs, Explosive, TPH, or ABP

No dissolved or total metals were analyzed

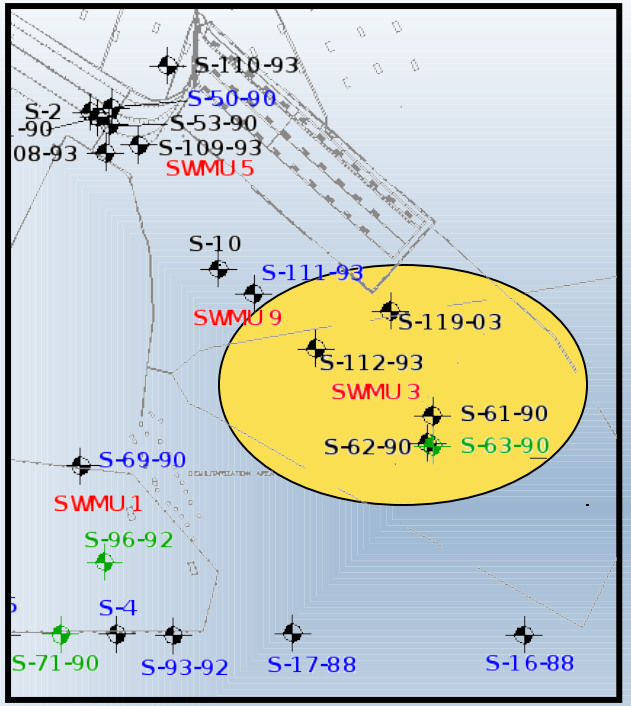


SWMU 1- Former Disposal Trenches



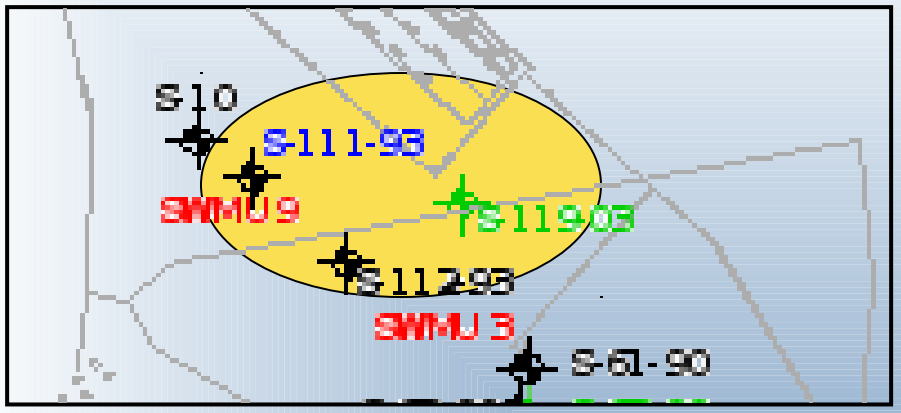
- Samples from wells S-71-90 and S-96-92
- Analyzed for VOCs, Explosive, and ABP
- All **Non-Detect**
- No metals in 2008 but metals are planned in 2009 (odd year)

SWMU 3 -- Impounding Bay/Disposal Pit



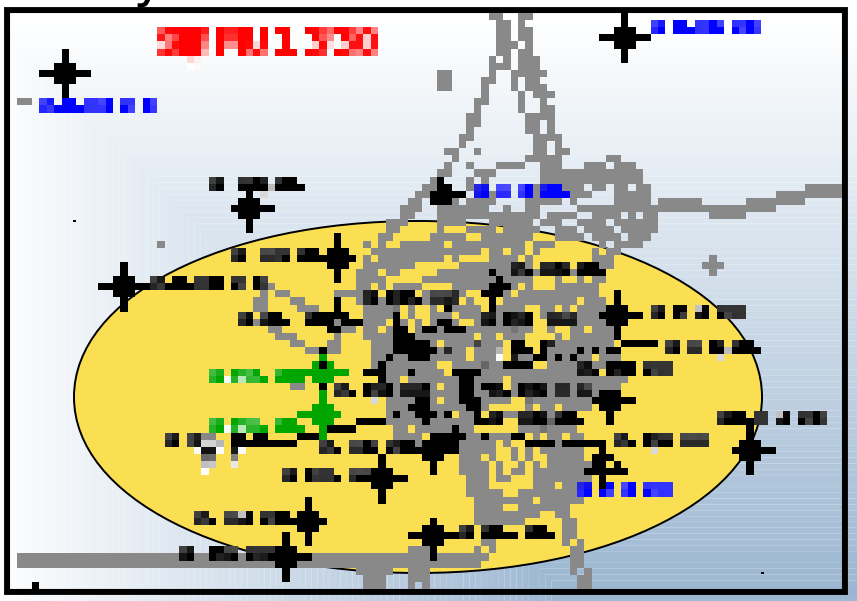
- Sample from well S-63-90
- Analyzed for VOCs, and ABP
- All **Non-Detect**
- No metals in 2008 but planned
  in 2009

SWMU 9- Old Area 2



- Sample from well S-119-03
- Analyzed for VOCs, and ABP
- All **Non-Detect**
- No metals in 2008 but planned
  in 2009

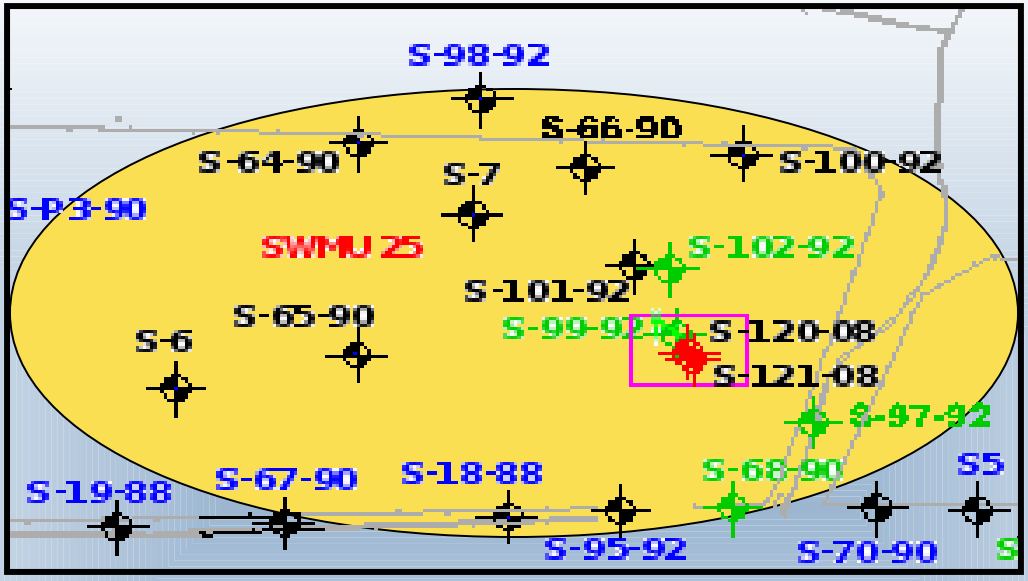
SWMU 13/30 Chemical Agent Munitions Disposal System (CAMDS) Facility



- Samples from wells S-76-91 and S-78-91
- Analyzed for VOCs, ABP, and TPH
- Chloroform in well S-78-91 (1.4 ug/L)
- ABP compounds **non-detect**
- No metals in 2008 and none planned in 2009

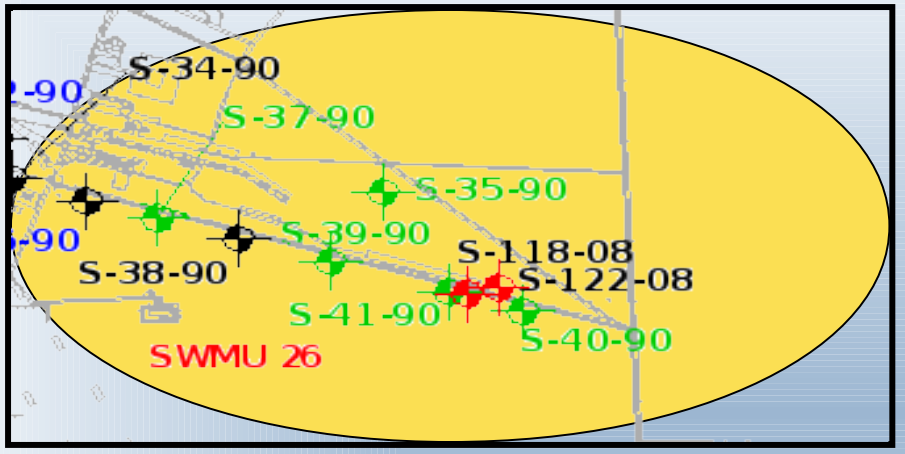
- TCE in S-78-91 and S-76-91 as 3.6 ug/L and 0.39 J ug/L, respectively
- IMPA in S-78-91 and S-76-91 as 0.708 ug/L and 0.274 ug/L, respectively
- TPH as diesel in S-78-91 and S-76-91 as 168 ug/L and 203 ug/L, respectively
- Free product measured in well CAM-1 and S-27-88 as 2.54 ft and 0.71 ft.

SWMU 25 West Demilitarization Area Disposal Pits



- Sampled four existing and two new wells (installed in 2008)
- Existing wells S-68-90, S-97-92, S-99-92,and S-102-92
- New wells S-120-08 and S-121-08
- Analyzed for VOCs, SVOCs, explosives, and ABP
- Explosive and ABP compounds **non-detect**
- No metals in 2008 but metals are planned in 2009
- Carbon Tetrachloride, Bis(2methylhexyl)phathalate exceeded MCLs

SWMU 26 -- Inactive Landfill



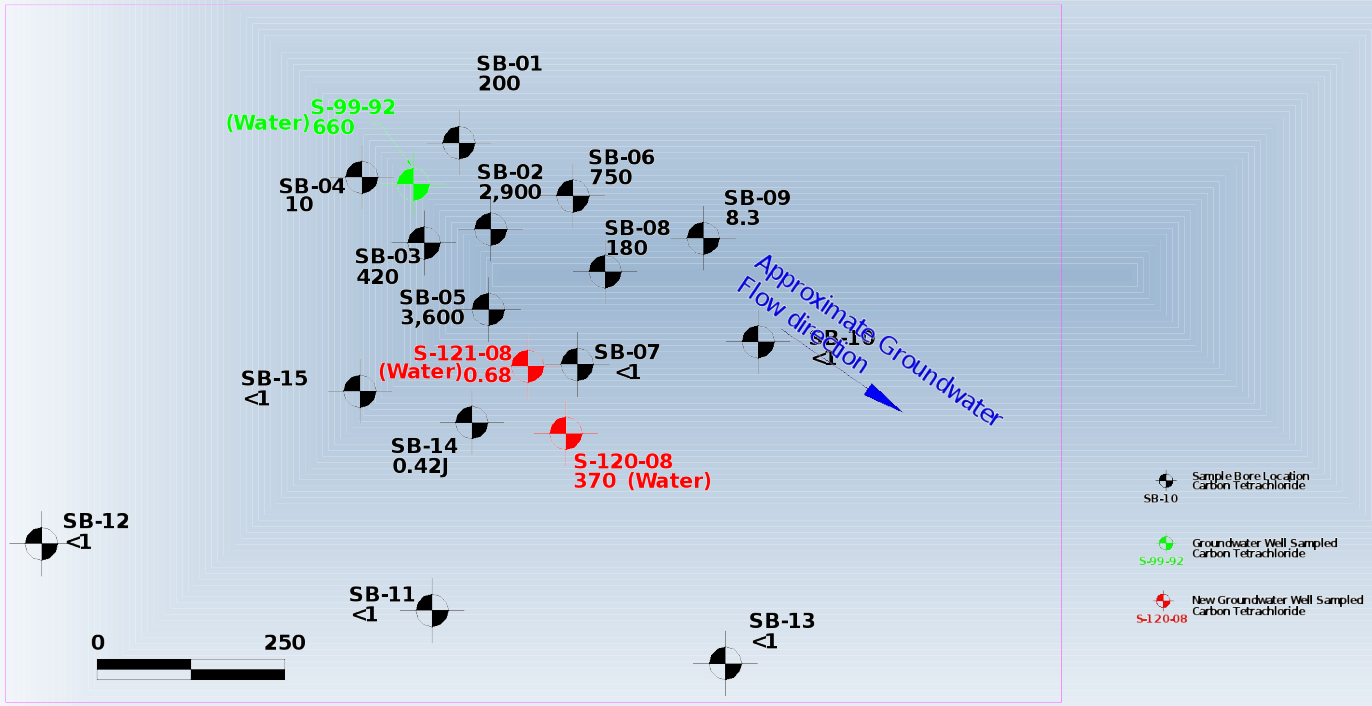
- Sampled five existing wells -- S-35-90, S-37-90, S-39-90, S-40-90, and S-41-90
- Two wells installed in 2008 were NOT sampled
- New wells S-118-08 and S-122-08 planned sampling in 2009
- Analyzed for VOCs and SVOCs
- Bis(2methylhexyl)phathalate exceeded MCL in two wells (S-35-90, S-41-9

Chemicals of Concern Above MCL

- Carbon Tetrachloride (MCL 5 ug/L)
- Bis (2methylhexyl)phathalate (MCL 6 ug/L)

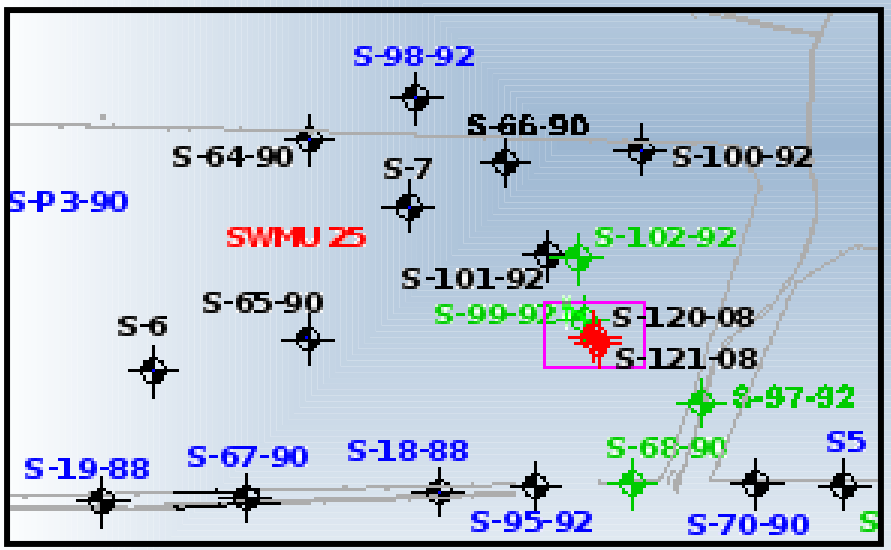
Carbon Tetrachloride

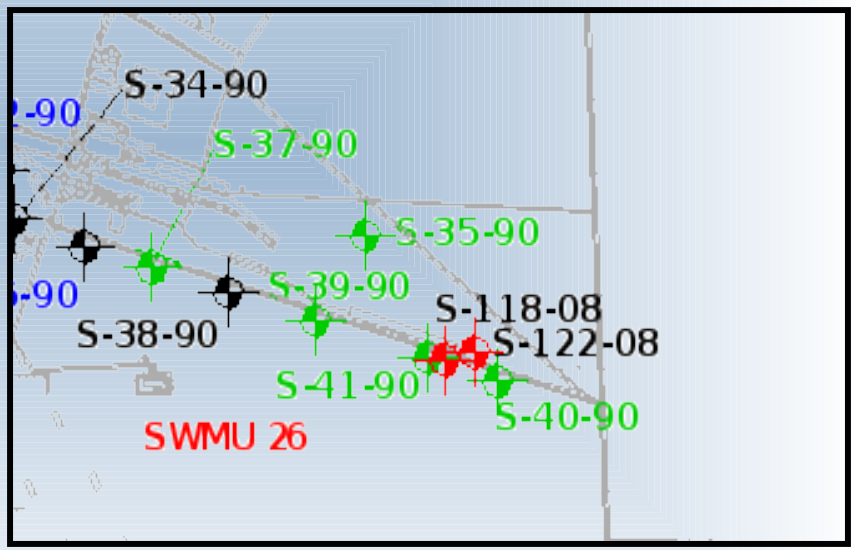
- Analyzed for in all 17 wells
- It was found only in SWMU 25



Bis (2methylhexyl)phathalate

- Analyzed in 11 wells and found in 10 wells
- Present in SWMUs 25 and 26



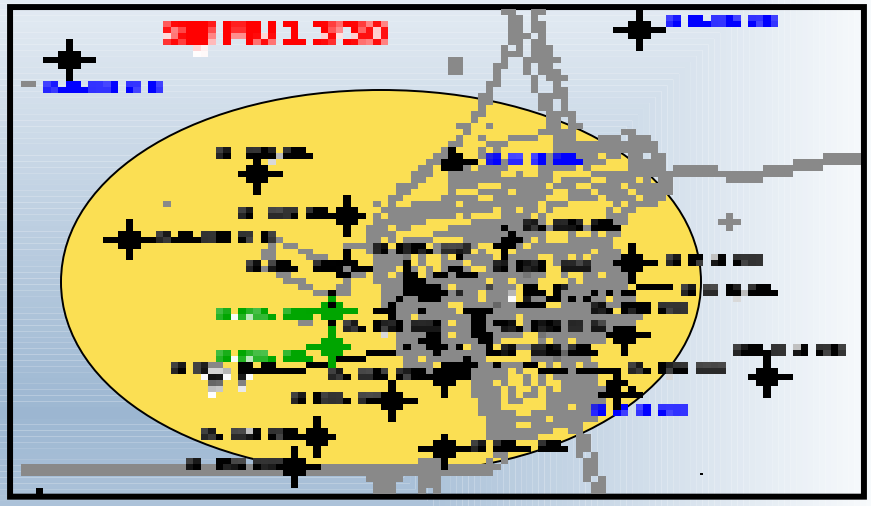


Floating Product in SWMU 13/30

- Floating Product Found in wells:
  - CAM-1, 2.52 Ft. Thick
  - S-27-88, 0.71 Ft. Thick

Diesel Range Hydrocarbons in SWMU 13/30

- Diesel Range Petroleum Hydrocarbons were Detected in Wells:
  - S-76-91, 203 ug/L
  - S-78-91, 168 ug/L



2008 Monitoring Program Summary

- No significant change in groundwater flow direction
- Contaminant concentrations are consistent with previous analytical data
- Carbon tetrachloride and Bis (2methylhexyl)phathalate are above MCL
- Carbon Tetrachloride is locally present in SWMU 25
- Bis (2methylhexyl)phathalate is present in SWMU 25 and SWMU 26
- Floating product is present in SWMU 13/30

Recommendation for 2009 Groundwater Program

- Measure depth to groundwater in selected wells (See next slide)
- Collect and analyze groundwater samples from 20 wells (including 2008 installed wells) at seven SWMUs
- Evaluate existing monitoring program and its protocols - optimize sampling frequency and assess the program's appropriateness for current conditions (the goal is to improve quality and reduce costs)
- Evaluate Carbon Tetrachloride plume in SWMU 25 and develop a long-term strategy to control and remediate
- Evaluate floating product in SWMU 13/30 and develop strategy to control and remediate floating product and hydrocarbon plume

DCD 2009 Groundwater Monitoring and Sampling Program

SWMU Number	Wells to be Sampled	Wells to be Measured for Depth to Groundwater
1	S-71-90 S-96-92	S-4, S-5, S-16-88, S-17-88, S-69-90, S-70-90, S-71-90, S-93-92, and S-96-92
2/11	S-3	S-3, S-45-90, S-P4-90
3	S-63-90	S-63-90
5		S-50-90
9	S-119-03	S-111-93, S-119-03
13/30	S-78-91 S-76-91	S-56-90, S-57-90, S-76-90, S-78-90, S-79-90, S-86-91, S-103-93, S-106-93 Measure thickness of LNAPL in CAM-1 and S-27-88
15		S-49-90
19		S-115-94
21/22		S-8
25	S-99-92, S-97-92, S-68-90, S-102-92, S-120-08, and S-121-08	S-18-88, S-19-88, S-67-90, S-68-90, S-95-92, S-97-92, S-98-92, S-99-92, S-102-92, S-P3-90, S-120-08*, and S-121-08*
26	S-37-90, S-39-90, S-40-90, S-41-90, S-35-90, S-118-08*, and S-122-08*	S-35-90, S-39-90, S-40-90, S-36-90, S-37-90, S-41-90 S-118-08*, and S-122-08*
28		S-32-90
Non-SWMU Wells		S-12-88, S-14, S-20-88, S-21-88, S-22-88, S-23-88, S-24-88, S-31-88, S-BR-1

(*) Includes wells installed in 2008

2009 Groundwater Monitoring Program Proposed Analytical Methods

SWMU	Well Number	VOCs (8260C)	SVOCs (8270D)	TPH (diesel) (8015B)	Explosive (SW8330)	ABP (Thiodiglycol and Organic Acid) (LC/MS)	Total and Dissolved Metals (6010B)	Mercury (Hg) (7470A)
1	S-71-90	X			X	X	As	X
	S-96-92	X			X	X	As	X
2./11	S-3	X	X		X	X		
3	S-63-90	X				X	As	X
9	S-119-03	X				X		
13/30	S-78-91	X		X		X		
	S-76-91	X		X		X		
	Measure thickness of LNAPL in CAM-1 and S-27-99							
25	S-99-92	X	X		X	X	As and Mo	X
	S-97-92	X	X		X	X	As and Mo	X
	S-69-90	X	X		X	X	As and Mo	X
	S-102-02	X	X		X	X	As and Mo	X
	S-120-08 *	X	X		X	X	As and Mo	X
	S-121-08 *	X	X		X	X	As and Mo	X
26	S-37-90	X	X					
	S-39-90	X	X					
	S-40-90	X	X					
	S-41-90	X	X					
	S-35-90	X	X					
	S-118-08*	X	X					
	S-122-08*	X	X					

* Wells installed in 2008

Thank you.

Any Questions?